

Informatics and Computational Approach to Nuclear Receptors and Metabolic Syndromes

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Informatics and computational approach are increasing their importance in the so called post genomic era. We are proposing to apply wide range of concepts and methods of Informatics and computing to the problem of nuclear receptors and metabolic syndromes under the name of NR-MSX (Nuclear Receptor and Metabolic syndrome X) Project. Nuclear receptors are ligand-activated transcription factors and form a superfamily. Nuclear receptors relate not only to classical hormonal activities but also to xenobiotic responsive/drug metabolic enzyme inducing reactions and various metabolic syndromes. At present the main research topics in this project are developing a workbench for selective nuclear receptor modulator study, developing the system that helps to describe gene expression modeling (gene expression modeler), elucidation of xenobiotics responsive/nuclear receptor mediated pathways/networks, and adipocyte and adipokine knowledge server. The project covers wide range of computational chemistry and Bioinformatics methods such as ligand receptor docking, protein-DNA binding, prediction of cis-regulatory elements, elucidations of target genes of transcription factors and pathway/networks. (T. Kaminuma: Pathways and Networks of Nuclear Receptors and Modeling of Syndrome X, Chem-Bio Informatics Journal, 3 (3), pp. 130-156 (2003))